HOST RANGE OF *PARATHELANDROS MASTIGURUS* (NEMATODA: OXYURIDA) IN AUSTRALIAN AMPHIBIANS

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During a survey of the helminth parasites in a total of 24 amphibian species in northern Australia, the nematode *P. mastigurus* was found in 8 of those species collected. Host records include 2 of the 3 species already listed as hosts, and 6 are recorded as new hosts for *P. mastigurus* in Queensland: *Crinia deserticola*, *Limnodynastes tasmaniensis*, *Mixophyes* sp., *Litoria inermis*, *Litoria rothii* and *Litoria rubella*. ❐ *Amphibia, Nematoda, Parathelandros mastigurus, parasites, Australia.*

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Parathelandros mastigurus (Oxyurida) was described from *Litoria* (=*Hyla*) *caerulea* and *L. gracilenta* in the Townsville region (N Queensland) by Baylis (1930). Since that time, *P. mastigurus* has been reported also to infect the introduced toad *Bufo marinus* in Brisbane, SE Queensland (Inglis, 1968). This Oxyurid genus is known exclusively from amphibians in Australia (Petter & Quentin, 1976) and has not been recorded from *B. marinus* elsewhere in the world. Thus, *P. mastigurus* is a parasite that has been acquired by the introduced toad from native Australian amphibians.

During a survey of the helminth parasites of amphibians in northern Australia, the nematode *P. mastigurus* was found in various amphibian species. Twenty-four amphibian species were collected throughout Queensland and the eastern part of the Northern Territory from 1989 to 1992. Amphibians were collected from the following localities: Abergowrie, Qld, 146°00'E 18°27'S; Bentley, Qld, 146°57'E 19°22'S; Black Rock, Qld, 144°07'E 19°05'S; Bloomfield, Qld, 145°21'E 15°56'S; Boyne Island, Qld, 151°21'E 23°57'S; Brisbane, Qld, 153°01'E 27°30'S; Calvert Hills, NT, 137°25'E 17°13'S; Cape Tribulation, Qld, 145°29'E, 16°05'S; Cape Weymouth, Qld, 143°23'E 12°55'S; Cape York ('Somerset'), Qld, 142°31'E 10°41'S; Charters Towers, Qld, 146°11'E 19°53'S; Coen, Qld, 143°12'E 13°57'S; Mackay, Qld, 149°11'E 21°09'S; Mareeba, Qld, 145°25'E 17°00'S; Mountain View Road, Qld, 146°57'E 19°30'S; Paluma, Qld, 146°12'E 19°01'S; Port Douglas, Qld, 145°28'E, 16°29'S; Townsville, Qld, 146°49'E 19°15'S; Yungaburra, Qld, 145°35'E 17°17'S. Eight of those species (see Table 1), including two of the three species already listed as hosts, were found to be infected with *P. mastigurus*. Thus, six amphibian species are recorded as new hosts for *P. mastigurus* in Queensland: *Crinia deserticola*, *Limnodynastes tasmaniensis*, *Mixophyes* sp., *Litoria inermis*, *Litoria rothii* and *Litoria rubella*.

A major failing in the publication of many plant and animal surveys and in some uses of museum biological data (e.g. modelling the distributions of plant or animal species) is that absence data are not recorded. Similarly, in many parasite surveys uninfected hosts are usually not listed. Thus, the full extent of the survey remains unknown and the data cannot be used in the development of predictive models of the host, and geographic distributions of parasite species. To rectify this situation, the amphibian species investigated in this study that were uninfected and their geographical localities are included (Table 2). Due to the low number of host specimens examined from many localities, this list should not be treated as definitive but used as an aid in determining potential hosts for further examination.

Members of the genus *Parathelandros* are characterised as parasites of the lower alimentary canal of amphibians and are restricted to the Australo-Papuan region (Inglis, 1971; Anderson, 1992). Eight species within the genus *Parathelandros* have been reported, all from frogs; seven of the species have been reported from Australia, the eighth species from a New Guinean microhylid (Moravec 1990). Inglis (1971) suggested that *Parathelandros* was strictly host specific at the level of host genus.

TABLE 1. Amphibian host species infected with *Parathelandros mastigurus*, and their geographical locations in northern Australia.

Host species	Geographical location	Number of hosts examined	Prevalence	Mean intensity	Maximum infection
Crinia deserticola	Bentley	8	12.5	1.0	1
Limnodynastes tasmaniensis	Townsville	9	11.1	3.0	3
Mixophyes sp.	Mt Lewis	1	100.0	28.0	28
Litoria caerulea	Townsville	8	12.5	8.0	8
	Abergowrie	7	85.7	8.0	39
Litoria inermis	Townsville	5	60.0	7.0	10
	Bentley	141	27.0	2.7	10
	Mountain View Road	16	18.8	4.3	10
Litoria rothii	Townsville	18	22.2	8.8	24
	Bentley	2	100.0	7.0	8
	Abergowrie	1	100.0	5.0	5
Litoria rubella	Townsville	28	75.0	5.5	18
	Bentley	1	100.0	1.0	1
	Mountain View Road	5	80.0	23.3	36
Bufo marinus	Bentley	186	4.8	13.9	70
	Mountain View Road	92	3.3	3.0	5
	Bloomfield	52	5.8	2.0	12
	Cape Tribulation	13	23.1	18.3	41
	Abergowrie	17	5.9	16.0	16
	Black Rock	7	14.3	3.0	3
	Boyne Island	26	11.5	2.3	5

Parathelandros mastigurus, however, has been found to have a wide host distribution across several families of amphibians, including the introduced *B. marinus*, in this study. In addition, *P. mastigurus* infects amphibians over an extensive geographical range of almost 3,000km from Bloomfield (this study) to Sydney (NSW) (Inglis, 1968).

There are no obvious common features of the amphibian species recorded as hosts for *P. mastigurus*. The host species are both terrestrial (*B. marinus, Litoria inermis*) and aboreal (*Litoria caerulea, Litoria rothii*) and are found in rainforest (Mt. Lewis) to open eucalypt woodland (Bentley, Townsville). The life cycle of *P. mastigurus* remains unknown, but other members of the Oxyurida have direct life cycles with either oral infection by embryonated eggs or autoinfection with eggs hatching within the rectum of the host (Anderson, 1992).

Voucher specimens of *P. mastigurus* have been deposited in the Queensland Museum under registration numbers G215994-215999.

LITERATURE CITED

ANDERSON, R.C. 1992. Nematode Parasites of Vertebrates: Their Development and Transmission. (CAB International: Wallingford).

BAYLIS, H.A. 1930. Some Heterakidae and Oxyuridae (Nematoda) from Queensland. Annals and Magazine of Natural History 5: 354-366.

INGLIS, W.G. 1968. Nematodes parasitic in Western Australian frogs. Bulletin of the British Museum of Natural History (Zoology) 16: 163-183.

1971. Speciation in parasitic nematodes. Advances in Parasitology 9: 185-223.

MORAVEC, F. 1990. Additional records of nematode parasites from Papua New Guinea amphibians with a list of recorded endohelminths by amphibian hosts. Folia Parasitologica 37: 43-58.

PETTER, A.J. & QUENTIN, J.-C. 1976. No, 4, keys to genera of the Oxyuroidea. In: Anderson, R.C., Chabaud, A.G. & Willmott, S. (eds) CIH keys to the nematode parasites of vertebrates. (Commonwealth Agricultural Bureaux: Franham Royal).

TABLE 2. List of host species examined at geographical locations where *Parathelandros mastigurus* was not recorded. Some of the species listed are also found in Table 1 but were not infected in every geographical location sampled.

Host species	Geographical location	Number of hosts examined
Limnodynastes convexiusculus	Cape York (Somerset)	2
Limnodynastes ornatus	Townsville	31
	Abergowrie	1
	Bentley	13
	Boyne Island	1
	Brisbane	1
	Calvert Hills	1
	Cape Weymouth	1
	Cape York (Somerset)	3
	Coen	5
	Mountain View Road	2
Limnodynastes peronii	Boyne Island	6
Limnodynastes terraereginae	Boyne island	3
Sphenophryne robusta	Cape York (Somerset)	2
Uperoleia lithomoda	Townsville	3
Cyclorana brevipes	Black Rock	1
	Coen	4
Cyclorana novaehollandiae	Coen	1
	Townsville	1
Rana daemelii	Cape Weymouth	2
Rana daemelii	Cape York (Somerset)	3
Litoria alboguttata	Coen	2
	Mountain View Rd	1
	Townsville	15
Litoria bicolor	Boyne Island	3
	Townsville	5
Litoria genimaculata	Paluma	54
Litoria lesueuri	Brisbane	1
Litoria nasuta	Bentley	2
	Cape Weymouth	1
	Townsville	3
Litoria nigrofrenata	Cape York (Somerset)	3
Litoria rothii	Black Rock	1
Litoria wotjulumensis	Calvert Hills	3
Bufo marinus	Brisbane	17
	Calvert Hills	72
	Cape Weymouth	42
	Coen	4
	Charters Towers	19
	Mackay	25
	Mareeba	8
	Port Douglas	11
	Yungaburra	10